

REMARKS

OVERVIEW

Claims 1-70 are pending in the present application. Claims 1-59, 69 and 70, drawn to a method, have been examined.

RESPONSE TO RESTRICTION REQUIREMENT

The Examiner has identified claims 1-59, 69 and 70 as being drawn to a method, classified in class 430, subclass 296. The Examiner has also identified a second invention, claims 60-68, drawn to a device, classified in class 436, subclass 501. The Applicant provisionally elected the method claims. The Applicant affirms the election of claims 1-59, 69 and 70.

ISSUES UNDER 35 U.S.C. § 112

Claims 8, 11, 20, and 21 have been rejected under 35 U.S.C. § 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim a subject matter which Applicant regards as the invention.

Claims 8 and 20 have been remedied to remove the word "patterned" and replace with --provided--. The Applicant respectfully submits that this remedies the rejections to claim 8 and 20.

Claims 11 and 21 have been rejected because they recite using "projection" in the patterning process. As the Examiner understands, projection lithography is well known in the art. Use of projection lithography is disclosed in the application, for example, in paragraph 44 where it is stated that "this patterning or exposure can be accomplished using scanning probe lithography, conventional e-beam lithography, the beam of a scanning electron microscope,

photolithography, a beam of scanned ions, and/or mask or projection techniques." Therefore, the Applicant respectfully submits that these rejections be withdrawn.

ISSUES UNDER 35 U.S.C. § 102

Claim 1 has been rejected under 35 U.S.C. § 102(b) as being anticipated by U. S. Patent No. 5,580,697 to Keana et al.

Claim 1 requires "selecting at least one internal bond from the plurality of molecules" and "reacting the at least one internal bond to form at least one second functional group."

Keana discloses methods for chemical modification of substrate surfaces (Abstract). In Keana, the surfaces are exposed to a reagent and activation energy is provided. Keana does not disclose the precision required by the Applicant's invention. In particular, Keana does not disclose "selecting at least one internal bond from the plurality of molecules." In Keana, internal bonds are not selected. In Keana, the particular reagent can be selected and the type of bonds and type of reaction can in some instances be selected. However, the methodology of Keana does not allow for being able to precisely select the specific internal bonds to be reacted as explicitly required by claim 1.

Thus, the present invention provides a significant advantage over Keana in that the present invention allows nanoscale structures to be created that are chemically precise, spatially precise, and simultaneously both chemically and spatially precise. See application, paragraph 15. Therefore, the rejections to claim 1 should appropriately be withdrawn.

Liu et al. disclose a patterned molecular self-assembly (Abstract). The pattern is capable of reacting with other functional groups. In Liu, a compound is selectively adsorbed on an exposed pattern surface and a second compound is selectively adsorbed on the first compound

(col. 3, line 66-61.4, line 34). Selective absorption take place when a particular compound comes in contact with either the substrate or another compound such that an ionic, covalent or hydrogen (electrostatic) bond is formed between the two (col. 5, line 13-18).

Liu does not disclose the chemical and spatial precision required by claim 1 as Liu does not provide for "selecting at least one internal bond from the plurality of molecules." The selective adsorption of Liu does not allow for the precision of the Applicant's claimed invention which requires the selection of the internal bonds to provide the advantage of chemical and spatial precision. Liu does not disclose this methodology. Therefore, the rejections based on Liu should also be withdrawn.

Claim 1 has also been rejected as being anticipated by U. S. Patent No. 6,436,615 to Brandow et al. Brandow discloses a process for selective modification of photopatterned polymer films (Abstract). In Brandow, substrate functional groups are exposed to actinic radiation to convert to photoproducts, the photoproducts being reactive to other functional groups (Abstract). Brandow does not disclose the step of "selecting at least one internal bond from the plurality of molecules." Brandow does not disclose the chemical and spatial precision associated with selecting internal bonds.

Claims 54-59 and 69-70 have also been rejected as being anticipated by U. S. Patent No. 6,436,615 to Brandow et al. Claim 54 requires both "selecting a plurality of molecules within the at least one layer" and "reacting at least one internal bond of each of the plurality of selected molecules to provide a functional terminal group." The Applicant's use of the language "selecting" is not disclosed by Brandow as Brandow does not allow for this level of control and the resulting chemical and spatial precision. The step of "reacting at least one internal bond of each of the plurality of selected molecules" is a further limitation that requires a level of

precision not disclosed in Brandow. The reactions of Brandow are simply not controlled with the precision required by claim 54. Therefore, this rejection to claim 54 should be withdrawn. As claims 55-59 depend from claim 54, those rejections should also be withdrawn.

Claim 69 is similar to claim 1 in scope but includes both steps of "individually selecting at least one molecule from the plurality of molecules" and "individually selecting at least one internal bond from the selected at least one molecule." For the reasons previously expressed, Brandow does not disclose these steps because Brandow lacks the requisite control over the reaction and the resulting chemical and spatial precision. Therefore, this rejection to claim 69 should also be withdrawn. As claim 70 depends from claim 69, this rejection should also be withdrawn.

ISSUES UNDER 35 U.S.C. § 103

Claims 2-53 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Brandow in view of Keana and further in view of the non-patent publication of Nyffenegger and co-worker. For the reasons previously expressed, neither Brandow nor Keana disclose the elements of claim 1. Nor does Nyffenegger disclose the chemical and spatially precise selection of internal bonds required by the claimed invention. Therefore, these rejections should be withdrawn and the Examiner should find all pending claims allowable.

Please charge Deposit Account No. 26-0084 for \$205 for a two-month extension of time. No other fees or extensions of time are believed to be due in connection with this amendment; however, consider this a request for any extension inadvertently omitted, and charge any additional fees to Deposit Account No. 26-0084.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned "Version with markings to show changes made."

Reconsideration and allowance is respectfully requested.

Respectfully submitted,

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**AMENDMENT — VERSION WITH MARKINGS
TO SHOW CHANGES MADE**

In the Claims

Please amend claims 8 and 20 as follows:

8. The method of claim 6 wherein the at least one electron is ~~patterned~~provided using a mask.
20. The method of claim 18 wherein the at least one ion is ~~patterned~~provided using a mask.